The Mechanics of the Mind

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Abstract

The article deals with the question of building a general concept that can reconcile the concept of "brain" and "mind", that is, how a biological brain creates subjective thinking. The research method is based on the revision of the basic concepts and the formation of logical chains of thought from the beginning of the formation of the brain before the onset of subjective thought processes. All displayed investigation confirmed the concept of logical algorithms by practical facts. The described concept allows you to get the basic principles of brain activity during the formation of thoughts that may be useful in the construction of general artificial intelligence.

Keywords: the mechanics of the mind, artificial intelligence, subjective thinking, algorithms of the brain, concept, the principle of emotions.

1 Introduction

Questions regarding the nature of the world and the essence of human existence have burdened many throughout history. Despite the vast resources invested in understanding these issues, they remain unresolved. The only tool—and, in fact, the reason for investigating these questions—is our brain.

Many great scientists, unable to explain how thoughts are formed in the brain, separated the concepts of "brain" (biological structure) and "mind" (mental processes). This separation certainly arose from a lack of knowledge available today. However, even with modern research methods and accumulated data, no single concept has been created that could unify these concepts. We understand that thoughts are formed by our brain and that one cannot separate "brain" and "mind," but the answer to how the brain creates the mind has not yet been given.

I. Kant attempted to define the limits of the human brain's ability to form new knowledge without experience. While he reached conclusions regarding the necessity of thinking without leading the mind into delusion, he did not consider the fundamental question of how the brain works. To build a model of the mind, a complete understanding of the principles of brain activity, or the "mechanics of the mind," is necessary. A correct concept should allow for calculations of mental capabilities; thus, the mechanics of the mind must belong to the exact sciences.

2 Materials and Methods

This article is based on the analysis of algorithms for the formation of human subjective thoughts under certain conditions. Additional concepts are introduced to enable calculations during the formation of the brain model. The materials are based on works of philosophers, biographies, documentaries, international standards, and scientific articles.

3 Results

3.1 Proof of Mind Formation through the Brain

To prove that our thinking is nothing other than the result of brain activity, it is sufficient to consider the example of deaf-blind people. I. Kant identified "space" and "time" as primary human knowledge. Practice shows that if a deaf-blind person is not specially trained, they will have abilities lesser than those of domestic animals. However, if they are given knowledge through specialized teaching technologies, a fully developed person results. This example indicates that without receiving information from the outside world, the brain is incapable of manifesting rational thought. This shows that our mind is formed by our brain, rather than by a "soul" that allegedly inhabits it.

3.2 Required Tools for Concept Formation

The brain is a tool whose activity is entirely related to information. Therefore, it is necessary to provide a precise, comprehensive definition of information and its units of measurement.

Standard definitions often describe information as knowledge about objects or facts within a context. But what is "knowledge" or "meaning"? These are conventions within our brain. We define "Proinformation" as follows:

> *Information is a configuration of world elements, in a static or dynamic state, represented fully or partially through the configuration of other world elements, in a dynamic or static state.*

To perform calculations, we define the following:

1. **Elemental volume of proinformation (V_k):** the number of unique elements forming a configuration.
$$V_k = N_k \tag{1}$$
Where N_k is the number of elements.

2. **Combinatorial volume of proinformation (V_n):** the number of all possible combinations of all elements.
$$V_n = V_k^n \tag{2}$$
Where n is the variability of the element.

3. **Potential of a proinformation unit (ϕ):** directly proportional to the number of its connections with subjects (N_{sv}) and inversely proportional to the number of copies of this proinformation (N_{kop}).
$$\phi = \frac{N_{sv}}{N_{kop}} \tag{3}$$

3.3 Algorithms of the Brain

The study identified the following core brain algorithms:

- **Perception Algorithm:** Processing incoming information packets from senses.
- **Analogy Algorithm:** Searching for similar proinformation in the existing knowledge base based on potential and data consistency.
- **Configuration Formation Algorithm:** Combining multi-sensory information into a single interconnected image (subjective perception).
- **Knowledge Formation Algorithm:** Breaking down information into "building blocks" and recording new elements or combinations.
- **Combination Algorithm (Dreaming):** Analyzing all possible variations and combinations of acquired knowledge, primarily during sleep, to predict possible world states.

3.4 The Crossword Principle

Human memory is organized not as a linear library, but as a "crossword." Proinformation is formed according to the law of intersections. The brain seeks to fill all "cells" of the crossword, using existing "letters" (partial data) as addresses for the required data. This explains why we can guess missing information once enough context is provided.

3.5 Principles of Humor

Laughter and joy are emotional expressions of brain activity. The brain strives to minimize energy expenditure. When a "puzzle" or "crossword" of a task is suddenly solved by an unexpected combination of information, the brain releases neurotransmitters to facilitate the formation of this new knowledge. This release creates the sensation of joy or humor.

4 Conclusion

To create a self-developing artificial brain, it is sufficient to build a memory structure that meets these principles:

1. Every bit of proinformation must be able to create connections with many others (Crossword Principle).
2. Every bit must have multi-impulse perception.
3. Universal coding for any proinformation.
4. Sequential interaction of all memory with any incoming signal.
5. Inclusion of configurational and permanent memory sections.
6. Hierarchical system of knowledge formation.
7. Two-way communication with the external world.
8. Information processing should be performed by the memory itself.